Astronomy Unit Study Guide

Name: _____ **Date:** _____

1. Which of these revolves around a planet?

   A. an asteroid
   C. a comet
   B. a star
   D. a moon

2. Which of the following planets has the shortest orbit around the Sun?

   A. Earth
   C. Mercury
   B. Mars
   D. Venus

3. The following table lists several characteristics for each of the eight planets in the solar system.

Planet Characteristics

Planet	Average Distance from Sun (kilometers)	Surface Characteristics	Moons/ Rings	Mass Compared to Earth
Mercury	58,000,000	Rocky	No/No	0.055 × Earth
Venus	108,000,000	Rocky	No/No	0.815 × Earth
Earth	150,000,000	Rocky	Yes/No	1 × Earth
Mars	228,000,000	Rocky	Yes/No	0.10744 × Earth
Jupiter	778,000,000	Gaseous	Yes/Yes	317.82 × Earth
Saturn	1,427,000,000	Gaseous	Yes/Yes	95.16 × Earth
Uranus	2,871,000,000	Gaseous	Yes/Yes	14.371 × Earth
Neptune	4,498,000,000	Gaseous	Yes/Yes	17.147 × Earth

   Which of these is the only planet that is both farther from the sun than Earth and has the same surface characteristics as Earth?

   A. Mercury
   C. Mars
   B. Venus
   D. Jupiter

4. The Sun is the largest body in the solar system. The Sun is a

   A. moon.
   C. satellite.
   B. planet.
   D. star.

5. Which of the following lists is in order from *smallest* to *largest*?

   A. universe → solar system → galaxy
   B. galaxy → solar system → universe
   C. solar system → universe → galaxy
   D. solar system → galaxy → universe

6. A planet in our solar system orbits the sun in approximately 225 Earth days. Which of these conclusions is *best* supported by this information?

   A. The planet orbits closer to the sun than Earth does.
   B. The planet's orbit is more circular than Earth's orbit.
   C. The planet orbits the sun at a slower speed than Earth does.
   D. The planet's orbit is more elliptical than Earth's orbit.

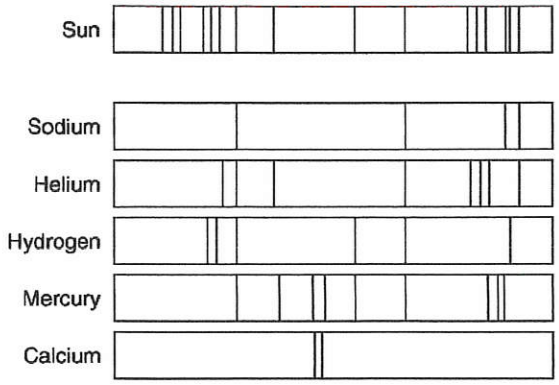
7. Which statement reflects the current theory of the origin of the universe?

   A. A small, ancient solar system increased in size.
   B. Huge clouds of gas and dust cooled and condensed.
   C. Two giant balls of matter collided and broke apart.
   D. An extremely small, dense ball of energy expanded.

8. The largest body in our solar system is

   A. Earth.
   C. Jupiter.
   B. the Sun.
   D. the Moon.

9. **Spectra**



Astronomers study the spectra of stars to determine their composition. According to these spectra, what are some of the elements that make up the sun's atmosphere?

A. Mercury, sodium, and helium

B. Calcium, helium, and hydrogen

C. Sodium, helium, and calcium

D. Hydrogen, helium, and sodium

10. Which planet has rings circling it?

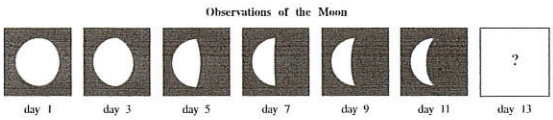
A. Mars

B. Venus

C. Saturn

D. Mercury

11. The chart shows observations of the Moon.

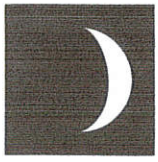


Which drawing shows how the Moon would *most likely* appear on day 13?

A. 

C. 

B. 

D. 

12. The diameter of Saturn is almost ten times that of the Earth, yet its density is much less. This can *best* be explained by the fact that Saturn

A. is farther from the Sun.

B. is a gaseous planet.

C. has a shorter period of rotation.

D. has a ring around its center.

13. The radiant energy that comes to Earth from the Sun is

A. only one wavelength that we see as yellow.

B. a narrow band of wavelengths that is entirely visible light.

C. mostly long wavelengths that become heat energy.

D. a range of many wavelengths from long to very short.

14. In the 1500s, Nicolaus Copernicus introduced the Sun-centered model of the solar system. How did this model help scientists of the time better understand the solar system?

A. Scientists were able to explain solar flares on the Sun.

B. Scientists were able to accurately measure the Sun's gravitational field.

C. Scientists were able to discover planets outside the solar system.

D. Scientists were able to explain the motion of planets more accurately.

15. Which *best* describes the moon?

A. The moon waxes as the visible portion appears to grow.

B. The moon wanes as the visible portion appears to grow.

C. When the moon waxes, it is called a new moon.

D. When the moon wanes, it is called a full moon.

16. What is the source of energy for the Sun?

A. hydrogen fusion

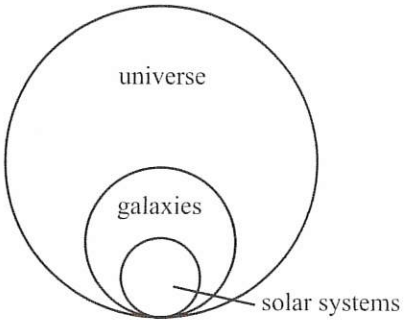
B. internal combustion

C. nuclear fission of metals

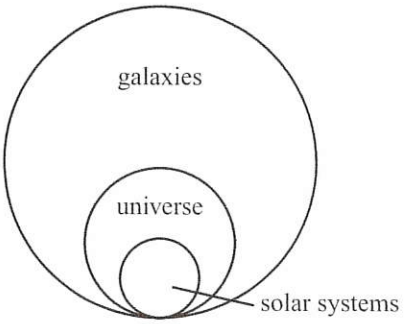
D. burning of solar gases

17. Which of the following diagrams *best* represents the relationship between galaxies, the universe, and solar systems?

A.



B.



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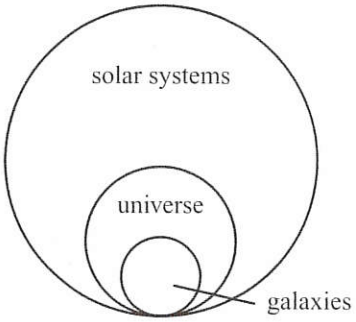
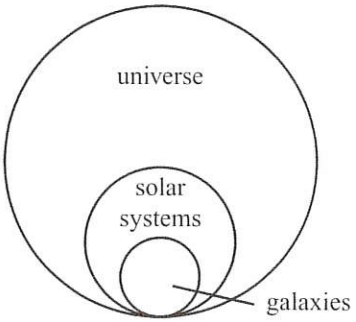


D.



18. In an accurate diagram of the solar system, which object would be shown *closest* to Earth?

A. the Moon

B. the asteroid belt

C. Mars

D. Saturn

The length of a day and the length of a year have been determined by Earth's orbital movement through space. If we lived on a different planet, the length of a day and the length of a year would be different than they are on Earth.

The table below provides information on the four planets that are closest to the sun. Use this information to answer the following questions.

Planet	Distance from Sun (millions of km)	Time for One Rotation on Axis	Time for One Revolution around Sun	Gravity	Major Components of Atmosphere
Mercury	57.7	59	0.241	0.38	none
Venus	107	243	0.616	0.89	carbon dioxide
Earth	149	1.00	1.00	1.00	nitrogen, oxygen
Mars	226	1.03	1.88	0.38	carbon dioxide, nitrogen, argon

Table adapted from Frank Press and Raymond Siever, Earth, 4th edition. © 1986 by W. H. Freeman and Company.

19. Which of the factors shown in the table represents a day?

A. distance from sun

B. time for one rotation on axis

C. time for one revolution around sun

D. gravity

20. Fusion is a form of nuclear reaction resulting in an enormous release of heat energy. The fusion of hydrogen to helium is a reaction that commonly occurs in

A. the Sun and other typical stars.

B. the ionosphere and thermosphere.

C. Earth's outer core of molten iron.

D. a comet's tail of ionized gases.

21. It has been determined that the oldest rocks retrieved from the Moon by Apollo astronauts were formed 4.44 billion years ago, while the oldest rocks found on Earth are less than 4 billion years old. This difference is *most* likely because

A. Earth formed well after the Moon was formed.

B. Earth cooled more slowly than the Moon.

C. Earth's oldest rocks have been recycled by plate tectonics and erosion.

D. Earth and the Moon were both captured by the Sun's gravity at different times.

22. According to the big bang theory, the universe emerged from a hot, dense state of matter only a few millimeters across. Which statement supports the big bang theory?

A. Billions of galaxies fill the universe.

B. Gaseous planets are farther from the Sun than rocky planets.

C. New matter is created and added to the universe as it expands.

D. Objects in the universe are moving farther away from each other over time.

23. Which of the following describes a feature that is shared by Earth and the Moon?

A. They have nearly the same atmosphere.

B. They have almost the same gravitational pull.

C. They have a rocky crust that includes mountains.

D. They have areas that show considerable water erosion.

24. What is at the center of our solar system?

A. a medium planet with an atmosphere

B. a star composed of carbon and nitrogen

C. a black hole that was once a star

D. a star composed of hydrogen and helium

25. Which statement *best* supports a current scientific understanding of the universe?

A. The universe is contracting because some stars are smaller than the Sun.

B. The continuous formation of stars is evidence that the universe is expanding.

C. The universe is contracting because some galaxies are colliding with other planets.

D. The increasing distances between galaxies is evidence that the universe is expanding.

26. Why do the Sun and Moon appear to move across the sky?

A. The rotation of the solar system makes the Sun and Moon seem to move.

B. The rotation of Earth makes the Sun and Moon seem to move.

C. The Sun and Moon revolve around Earth.

D. Earth revolves around the Sun and the Moon.

27. Which object in the sky is a satellite of the planet Earth?

A. Sun B. Moon C. Mars D. Saturn

Astronomy Unit Vocabulary

1. **Geocentric –**

2. **Heliocentric –**

3. **Big Bang Theory -**

4. **Doppler Effect –**

5. **Nebular Theory –**

6. **Matter –**

7. **Element –**

8. **Atom –**

9. **Fusion –**

10. **Fission –**

11. **Cosmic Rays –**

12. **Kepler's 1st Law –**

13. **Kepler's 2nd Law –**

14. Kepler's 3rd Law –

15. Oblate Spheroid –

16. Axis –

17. Latitude –

18. Longitude –

19. Rotation –

20. Revolution –

21. Equinox –

22. Solstice –

23. Satellite –

24. Giant Impact Hypothesis –

25. Lunar Eclipse –

26. Solar Eclipse –

27. Waxing (related to the Moon) –

28. Waning (related to the Moon) –

29. Gibbous –

30. Crescent –

31. Spring Tide –

32. Neap Tide –

33. Terrestrial Planets –

34. Jovian Planets –

35. Rules to be a Planet -

36. Barycenter –

37. Precession –

38. Nutation -